circuit 13, calculates differential data between the target block and the found block, and creates image data based on the calculated differential data and the value of the motion vector.

The orthogonal transformation circuit 15 performs DCT (Discrete Cosine Transformation) so as to transform the differential data generated by the interframe prediction circuit 14, for each block, and sends the transformed data to the quantization circuit 16. At this time, the orthogonal transformation circuit 15 writes DC (Direct Current) components of the brightness and color information of each block into the DC component memory 25.

The quantization circuit 16 divides the data sent from the orthogonal transformation circuit 15 by the quantization step width calculated by the quantization-step-width calculation circuit 28, and leaves out the remainder of the division so as to quantize the data from the orthogonal transformation circuit 15, and sends the resultant quantization to the encoding circuit 17.

The encoding circuit 17 encodes the data quantized by the quantization circuit 16 and the data of the motion vector into a variable-length code, and sends the variable-length encoded data to the transmission buffer circuit 18. Since the appearance probability of the orthogonal transformed data or motion vector are uneven, an amount of information to be transmitted can be made smaller, by variable-length encoding the information so as to achieve compressing of the information. That is, when to variable-length encode target data, the encoding circuit 17 assigns a short length code to a value showing a high appearance probability and a long length code to a value showing a low appearance probability.

The transmission buffer circuit 18 stores data sent from the encoding circuit 17, and sends the stored data at a constant transmission rate in harmony with the transmission rate of the transmission path.

The buffer-storage amount detection circuit 19 detects a storage amount of data

stored in the transmission buffer circuit 18, and informs the quantization-step-width calculation circuit 28 of the detected storage amount.

The motion-vector-value memory 21 stores the motion vector(s) written by the motion prediction circuit 13 by each block of the input image frame, and supplies the motion-vector-based block grouping section 22 with the stored motion vector(s).

The motion-vector-based block grouping section 22 arranges blocks of the input image frame into groups each of which is composed of a plurality of blocks showing the common-directional motion vector, based on the value of the motion vector of each block stored in the motion-vector-value memory 21. After this, the motion-vector-based block grouping section 22 supplies the weighting coefficient calculation circuit 27 with grouping information (by motion vector) representing a plurality of blocks belonging respectively to their corresponding groups in association with each other. At this time, in the case where the input image data has no motion and can not be arranged into groups based on the motion vector, the motion-vector-based block grouping section 22 supplies the weighting coefficient calculation circuit 27 with information about that as the grouping information. When grouping the blocks, the motion-vector-based block grouping section 22 arranges the blocks of the input image frame into groups in consideration of the positional relationship of each block, so that neighboring blocks showing the common directional vector belongs to the same group. Even if two different portions of the same display screen have the similar motion, the motion-vector-based block grouping section 22 still arranges those two different portions into different groups.

The DC component memory 25 stores the DC components of the brightness and color information which are written by the orthogonal transformation circuit 15, according to each block of the input image frame, and supplies the DC-component-based block grouping section 26 with the stored DC components.

The DC-component-based block grouping section 26 arranges the blocks of the

input image frame into groups, in such a way that blocks showing close values to each other belong to the same group, based on the values of the DC components of the brightness and color information stored in the DC component memory 25. Then, the DC-component-based block grouping section 26 supplies the weighting coefficient calculation circuit 27 with grouping information (by DC component), representing the plurality of blocks respectively belong to groups in association with each other. Specifically, likewise the quantization circuit 16, the DC-component-based block grouping section 26 divides each of the DC components by a predetermined step width, and compares the resultant quotient of the divisions without the remainder thereof between the blocks, so as to accomplish the above grouping. The above blocks are arranged into groups based on the brightness information and color information, thereby grouping the blocks each having the similar color, brightness, etc. to figure the face, hair, clothes and background images. When grouping the blocks, the DC-component-based block grouping section 26 arranges the blocks of the input image frame into groups, so that neighboring blocks showing the close DC component value to each other belong to the same group, in consideration of the positional relationship of the blocks. In the case where two different portions of the display screen have the similar brightness or colors, the DC-component-based block grouping section 26 still arranges those two different portions into different groups.

Upon reception of the grouping information (by motion vector) about motion of image data, for each group specified in the received grouping information, the weighting coefficient calculation circuit 27 assigns a weighting coefficient to each of the blocks included in the group, based on the number of blocks of the group and the graph shown in FIG. 2. As illustrated in FIG. 2, the more the number of blocks increases, the larger the assigned weighting coefficient becomes.

On the contrary, upon reception of the grouping information (by motion vector) representing that the grouping can not be achieved based on motion vector, the weighting